

IN THE CLAIMS:

1. (CURRENTLY AMENDED) A method of optimizing a coefficient of performance of a refrigeration system comprising the steps of:
 - compressing a refrigerant to a high pressure in a compressor device;
 - cooling said refrigerant by exchanging heat between said refrigerant and a first fluid medium in a heat rejecting heat exchanger;
 - expanding said refrigerant to a low pressure in an expansion device;
 - evaporating said refrigerant by exchanging heat between said refrigerant and ~~an airflow~~ a second fluid in a heat accepting heat exchanger;
 - sensing a parameter of said refrigeration system;
 - comparing said parameter to an efficiency parameter representative of an efficient refrigeration system;
 - determining ~~if a state of efficiency of the refrigeration system is operating at an efficient state or an inefficient state~~;
 - adjusting said refrigeration system if the step of determining said state of efficiency determines that the refrigeration system is operating at ~~said an~~ inefficient state.
2. (ORIGINAL) The method as recited in claim 1 wherein said refrigerant is carbon dioxide.
3. (ORIGINAL) The method as recited in claim 1 wherein said parameter is an outlet temperature of said refrigerant exiting said heat rejecting heat exchanger.
4. (ORIGINAL) The method as recited in claim 1 wherein said parameter is an outlet enthalpy of said refrigerant exiting said heat rejecting heat exchanger.

5. (CURRENTLY AMENDED) The method as recited in claim 1 wherein said parameter is a pressure ~~drop of difference between a first pressure of~~ said refrigerant ~~across entering~~ said heat rejecting heat exchanger ~~and a second pressure of said refrigerant exiting said heat rejecting heat exchanger~~.
6. (CURRENTLY AMENDED) The method as recited in claim 1 wherein said parameter is a flow rate of said ~~first~~ fluid that exchanges heat with said refrigerant in said heat rejecting heat exchanger.
7. (CURRENTLY AMENDED) The method as recited in claim 1 wherein said parameter is a ~~temperature~~ difference between a refrigerant temperature of said refrigerant exiting said heat rejecting heat exchanger and a fluid temperature of said fluid entering said heat rejecting heat exchanger.
8. (ORIGINAL) The method as recited in claim 1 wherein said parameter is a suction pressure of said refrigerant entering said compressor device.
9. (ORIGINAL) The method as recited in claim 1 wherein said parameter is a temperature of said refrigerant exiting said compressor device.
10. (CURRENTLY AMENDED) The method as recited in claim 1 wherein said parameter is ~~a~~ ~~size of~~ an opening of said expansion device.
11. (ORIGINAL) The method as recited in claim 1 wherein said parameter is a quality of said refrigerant entering said heat accepting heat exchanger.
12. (ORIGINAL) The method as recited in claim 1 wherein said parameter is a coefficient of performance of the refrigeration system

13. (ORIGINAL) The method as recited in claim 1 wherein said parameter is a refrigerant mass flow rate of the refrigeration system.
14. (ORIGINAL) The method as recited in claim 1 wherein the step of adjusting said refrigeration system includes increasing a flow rate of said fluid medium through said heat rejecting heat exchanger.
15. (CURRENTLY AMENDED) The method as recited in claim 1 wherein the step of adjusting said refrigeration system includes increasing a size of an opening of said expansion device.
16. (CURRENTLY AMENDED) A transcritical refrigeration system comprising:
a compression device to compress a refrigerant to a high pressure;
a heat rejecting heat exchanger for cooling said refrigerant, and a first fluid flows through said heat rejecting heat exchanger to exchange heat with said refrigerant;
an expansion device for reducing said refrigerant to a low pressure;
a heat accepting heat exchanger for evaporating said refrigerant, and an airflow a second fluid exchanges heat with said refrigerant in said heat accepting heat exchanger;
a sensor to sense a parameter of the refrigerant system; and
a control that stores an efficiency value of said parameter representative of an efficient state of the refrigeration system, compares said efficiency value to said parameter to determine if a state of efficiency the refrigeration system ~~is in an efficient state or an inefficient state~~, and adjusts the refrigeration system if the refrigeration system is determined to be operating in an inefficient state.